

ABSTRACT

The present invention provides operational methods for cocatalysts in atmosphere heat treatment. The cocatalyst are dissolved or dispersed into an atmosphere material or atmosphere directly or indirectly, and the cocatalyst are maintained in the form of a gas phase or a finer dispersion (such as a mote) and diffuse into the atmosphere in the heat treatment equipment or heat treatment gas-producing equipment so that the cocatalyst has the largest area contact with the atmosphere material and atmosphere and plays a part in catalysis and activation of the atmosphere in atmosphere heat treatment. Also the present invention provides a variety kind of cocatalysts for atmosphere heat treatment of metal material and methods of atmosphere heat treatment.